REMARKS

Favorable reconsideration is respectfully requested.

The claims are 31 to 38 and 40 to 68.

The above amendment is responsive to points set forth in the Official Action.

In this regard, the main composition of claim 31 now recites the inclusion of a polymer in the aqueous gelant and one or several crosslinking agents.

Accordingly, claim 39 has been canceled as unnecessary.

Minor editorial revisions have been made throughout the remaining claims.

The significance of the above amendments will become further apparent from the remarks below.

Claims 31 to 37 and 44 to 49 have been rejected under 35 U.S.C. 102(b) as being anticipated by Vanderhof (U.S. 3,284,393).

This rejection is respectfully traversed.

Vanderhof (US 3,284,393) relates a method for polymerization of water soluble monomers in an emulsion as the starting point.

In contrast, the present invention is not concerned with a method for producing a water soluble polymer. In principle, the polymer of the present invention may have been produced by the method according to Vanderhof.

Further, Vanderhof does not appear to disclose the presently recited aqueous gelant comprising a polymer and one or more crosslinking agents.

It is noted that claim 39 has not been rejected over Vanderhof and that this claim has been incorporated in claim 30.

Accordingly, the rejection on Vanderhof is untenable.

Claims 31 to 37 and 44 to 49 have been rejected under 35 U.S.C. 102(b) as being anticipated by Anderson (U.S. 3,624,019).

Anderson (U.S. 3,624,019) relates to a process for rapidly dissolving water soluble polymers and fails to teach the presently claimed composition.

It is also noted that claim 39, which has been incorporated in claim 31 is not rejected over this reference.

Claims 31 to 37, 44 to 57 and 63 to 68 have been rejected under 35 U.S.C. 102(e) as being anticipated by Quintero (U.S. 6,204,224).

This rejection is also respectfully traversed.

Quintero (US 6,204,224) discloses a method for producing an oil-based drilling fluid (mud). The drilling fluid comprises the weighting material barite, water soluble polymer, oil and emulsifier. The properties of the drilling mud is described as follows (page 2, lines 25-35): good rheological properties and suspension characteristics provide stable drilling fluids exhibiting little or no barite sag to give good fluid loss control properties.

Hence it follows that the drilling fluid should not penetrate the formation, but rather, create an efficient filter cake.

The present invention, in contrast, is designed for penetration into the formation without making any filter cake. The emulsion according to Quintero is stable. In the present invention it is crucial that the emulsion is only used in order to transport a water soluble gelant solution and oil in a definite volume ratio down and into the formation. The emulsion separates into a water phase and an oil phase in the formation as recited in claims 67 and 68, (for example, the present method clearly does not employ a stable emulsion). Thus, the present composition is not suitable for Quintero's method nor is Qunitero's composition suitable for the present method..

The above comments concerning crosslinking agents also apply to this rejection. In this regard, this rejection has not been applied against claim 39 which is now incorporated in claim 31.

Claims 31 to 37, 44 to 57 and 63 to 68 have been rejected under 35 U.S.C. 102(b) as being anticipated by Phillips (U.S. 4,284,304).

This rejection is also respectfully traversed for the above-discussed reasons, namely, in view of the incorporation of the crosslinking agents of claim 39 in claim 31.

Further, Philips '304 does not employ the term "gelant", but simply the use of polyacrylamide polymer for injection in an injector with the purpose to increase the viscosity of

the water phase. Philips '304 also describes a plant for making acrylamide from acrylonitrile via acrylamide monomers. This reaction takes place in water in crude oil emulsion.

The present invention is not concerned with making a polymer. The starting point for the present invention is the use of a polymer, e.g. polyacrylamide polymer which is crosslinked via crosslinking agents to form a gel. Thus rejection erroneously appears to conclude that the final product of the present invention is merely an aqueous gelant emulsified in oil.

Claims 31 to 37 and 44 to 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Phillips (U.S. 4,283,507).

This rejection is respectfully traversed.

Philips (US 4,283,507) describes a method for hydrolyzing acrylamide. This is done by adding a solution of an emulsion to the acrylamide monomer before polymerization. Further, hydrolysis is carried out by means of caustic or sodium hydroxide or a combination of these. The final product is a hydrolyzed polyacrylamide with a given degree of hydrolysis.

It is also noted that this rejection is not applied against claim 39 which has been incorporated into claim 31.

Claims 31 to 38, 44 to 57, and 63 to 68 have been rejected under 35 U.S.C. 102(b) as being anticipated by Bleeker (U.S. 4,670,550).

This rejection is respectfully traversed in view of the incorporation of claim 39 in claim 31. It is noted that claim 39 has not been rejected over this reference.

Bleeker (U.S. 4,670,550) describes a method wherein an emulsion is made by the addition of a polymer in the form of polysaccharides. From the examples it can be seen that focus is that the emulsion shall be stable, which is the opposite of the present invention. It also appears that the reason why the emulsion is used is to prevent problems in connection with dusting when dried polymer is thinned out with water (dust problems).

The rejection contends that Bleeker is a method for "enhanced oil recovery"i.e. the process is one in which the composition is introduced into the subterranean formation to increase the permeability of oil compared to water in the well. In reply, it should be stressed that enhanced oil recovery is a much broader concept, dealing with e.g. reduction of interfacial

tension between oil and water, between sweep, compatability and mobility control. Well treatment with the object of reducing water permeability (water shutoff) is strictly defined by the art-skilled and is not included in the concept "enhanced oil recovery" (EOR).

Further, there is no mention of which EOR method that should be used if the biopolymer mixture shall be injected into a formation.

Claims 31 to 37, 44 to 56, and 63 to 68 have been rejected under 35 U.S.C. 102(b) as being anticipated by Dawson (U.S. 5,735,349).

This rejection is also respectfully traversed, noting that the rejection has not been applied against claim 39 which has been incorporated in claim 31.

Dawson (U.S. 5,735,349) describes a method for reducing the permeability in a formation, and the permeability of water is reduced more than the oil permeability. The reduction of the permeability is achieved by injection of "swellable crosslinked polymer particles" which is made from monomers in an emulsion. The injected particles are claimed to be "trapped" in the formation during injection. The water permeability (with backward production of water) will be reduced more than the oil permeability (with backward production of oil) due to the fact that the mentioned particles will swell in contact with water.

Dawson's composition comprises particles which flow through the formation and are trapped in the pore structure.

The present invention, in contrast, relates to a composition and a process for reducing the water permeability more than the oil permeability by using a crosslinked gel. The crosslinked gel is made by a reaction between polymer and a crosslinking agent. The composition of polymer and crosslinking agent before gelling is referred to as a "gelant". The gelant is injected as an emulsion in order to ensure placing of the gelant in the formation with controlled saturation. The emulsion is deliberately chosen to be unstable in order to break into a water phase (gelant) and an oil phase after being placed in the formation. The gelant is gelled up (considerable reduction of water permeability) while the oil phase ensures continuity of oil. The present invention is therefore not disclosed or suggested by Dawson.

Lastly, in the present invention a crosslinked gel is formed in which the chemicals are transported into the formation in the form of an emulsion comprising a crosslinker, polymer (not crosslinked polymer), oil and emulsifier.

Claims 31 to 38, 44 to 57, and 61 to 68 have been rejected under 35 U.S.C. 102(e) as being anticipated by Sunde (U.S. 5,919,739).

Sunde (U.S. 5,919,739) relates to plugging of a well. An emulsion is created in which the polymer is dissolved in the water phase while the crosslinking agent is dissolved in the oil phase. A blocking gel is made by the contact of crosslinking agent and polymer. The "plugging liquid" will have the effect to plug both water and oil, and will therefore not be suitable for selective permeability reduction with the intention of increasing oil production from a well.

This rejection is also respectfully traversed in view of the fact that it has not been applied against claim 39 which has been incorporated in claim 31.

Claims 31 to 68 have been rejected under 35 U.S.C. 102(e) as being anticipated by Le et al. (U.S. 6,169,058).

This rejection is also respectfully traversed.

Le (U.S. 6,169,058) relates a method for fracturing a formation so that the throughput (productivity) increases. This method is performed by injecting e.g. a gel or viscous solution at a pressure above the fracturing pressure of the formation. In Le it is described that the fracturing fluid may consist of a water soluble polymer solution in an emulsion. Subsequently, an amount of proppant is pumped in order to ensure that the cracks are kept open by back production.

The principle with fracturing is to increase the production, especially from low permeable places, in that the fractures increase permeability.

The present invention, in contrast, relates to a method for reducing the water permeability (and thereby increasing oil production) by reducing the permeability in water producing zones more than oil producing zones (DPR).

For the foregoing reasons, it is apparent that the composition and process as presently claimed are neither disclosed nor suggested by the cited references.

No further issues remaining, allowance of this application is respectfully requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact undersigned at the telephone number below.

Respectfully submitted,

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